

Supply Chain 3.0 and the Search for Value

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Supply chains are a-changing...

- **Globalization** is increasing, perhaps at an increasing rate
- The supply-chain **political environment** is changing...whether caused by globalization or by new technology or new patterns of migration
 - Tariffs, sanctions, potential political dominance of some countries by a different set of countries
- Technology is making **lives** better but threatening **livelihoods**
 - AI + robotics, 3-D printing, driverless trucks
 - If you continue to have a life, it will be better but you may not have a life (the gig economy)
- **No low-hanging fruits** for performance (buy athletic shoes for \$5 from suppliers, sell for \$150 to consumers)
 - Wages in China going up, competitors doing the same, plus the Chinese are outsourcing themselves
- **Fluctuating prices** of commodities

There are not only many challenges but also at different levels of complexity

- Across-plant relative inefficiencies in different parts of the globe
- Retailer customers want more customer service via integration
- Reputation risk from upstream suppliers 2-3 tiers away
- Competitors seem to be making good press on environmental causes: Unilever versus P&G on palm oil
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...and there are many new ideas for different initiatives for any company

- Six Sigma initiatives in and across plants
- Lean initiatives in supply chain
- Public Relations initiatives on sustainability
- Social initiatives in some rural area in S. America
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- ...

PROBLEM: Given the number and variety of supply chain initiatives, there is no overall framework to evaluate them

Question: How should managers seek more value for their companies from its supply chains?

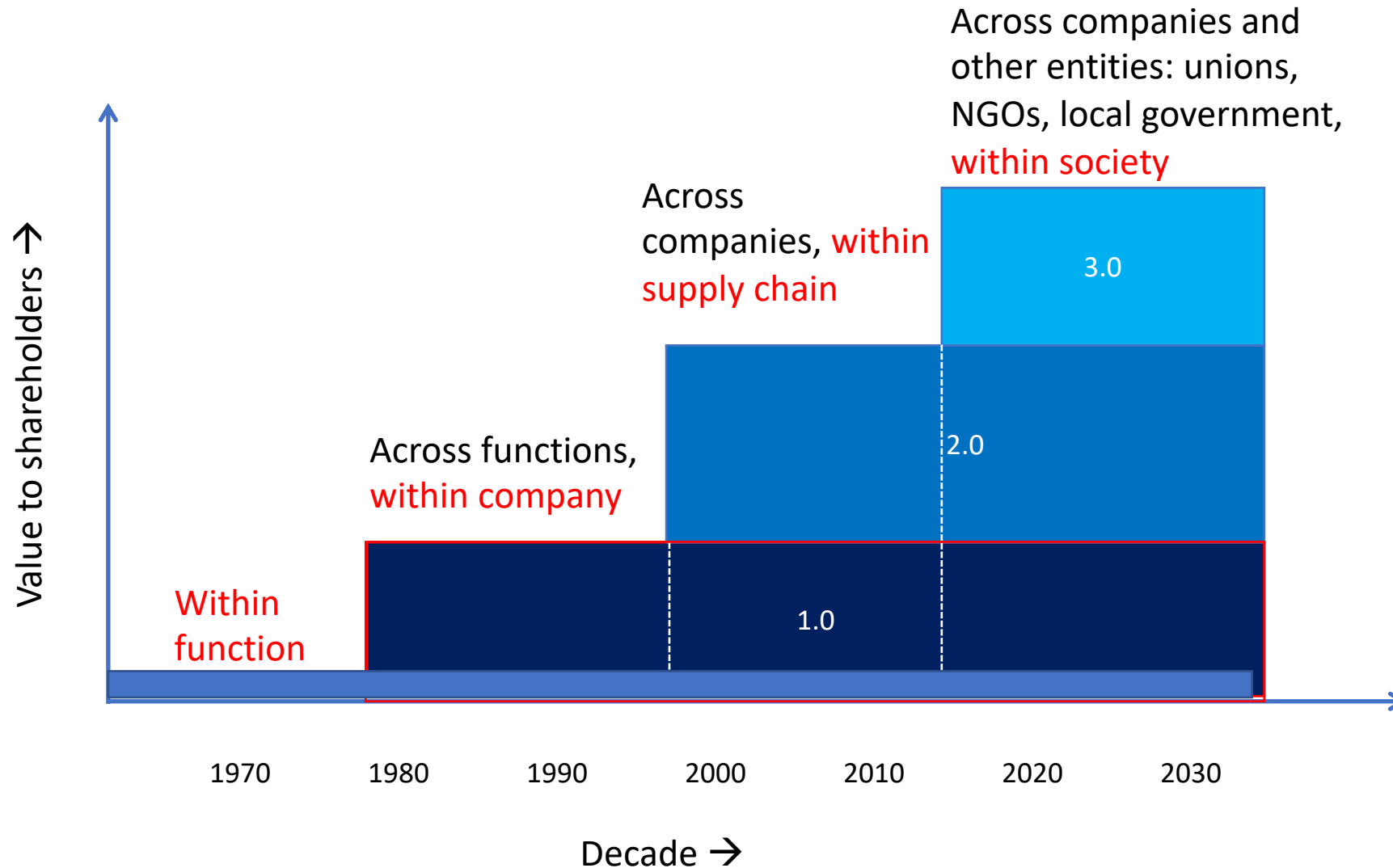
Question: How should managers seek more value for their companies from its supply chains?

My answer: The search for value has led supply chains through different levels (1.0/2.0/3.0)– managers should recognize the level of the particular challenge and make choices according to the particular level of the challenge

Overall structure

1. What are these levels?
2. How some companies created value, others did not
3. Why this was the case
4. What do managers need to do?

Looking across the decades, challenges and opportunities have grown at different levels, each level building on the gains of the previous one.

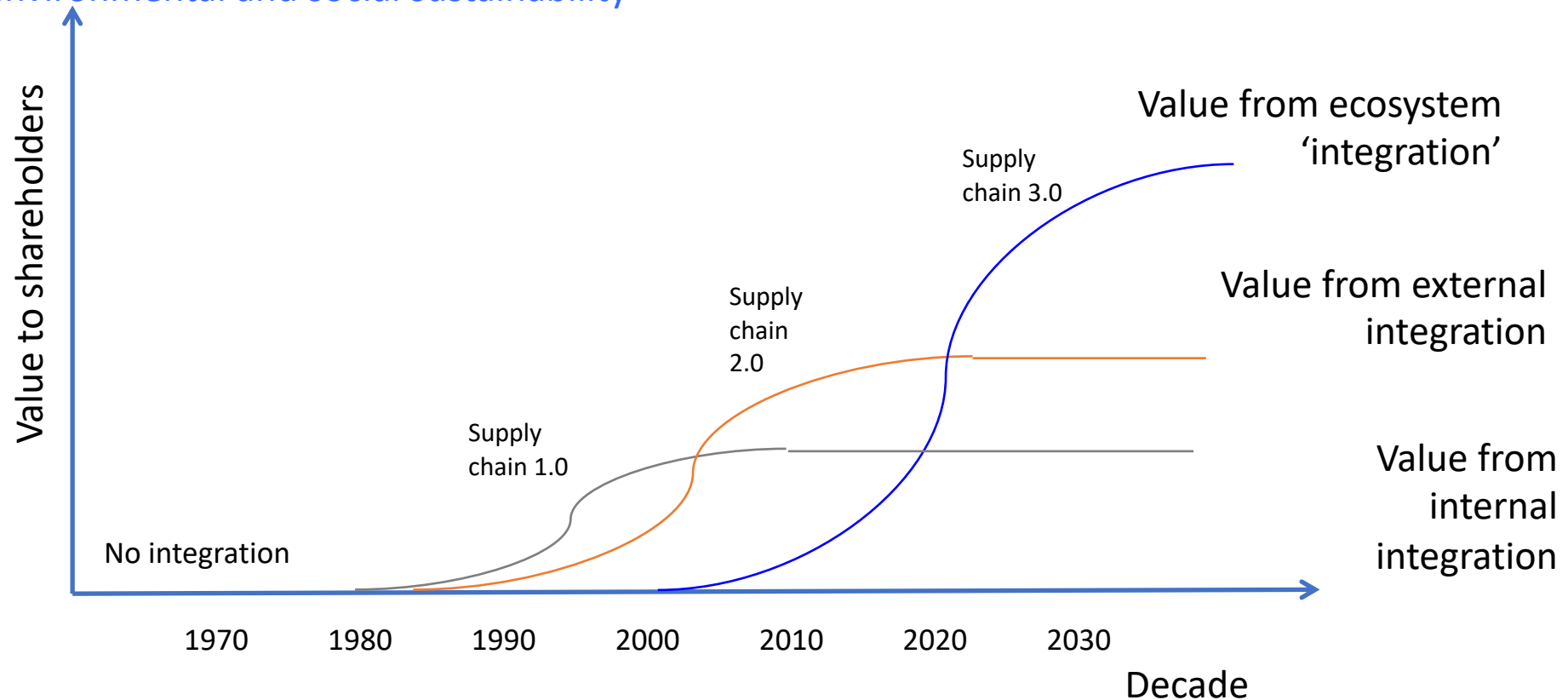


Various efforts and initiatives created value (at different times for many industries, different types of initiatives have been of interest...

1990s – integration within the company with ERP and APS

2000s – outsourcing and integration with supply chain partners

2010s – environmental and social sustainability



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Let's consider some examples where companies have recognized the level of the challenge or not ...and made choices accordingly

Level	Lost value	Gained value
1.0	Chemicals company with S&OP but no mfg-sales alignment	US air conditioner manufacturer – aligned Pricing and Sales for profits
2.0	Ericsson – created efficient but brittle supply chain	Pharma company – built resilience into the supply chain, showed it can save the world
3.0	Vedanta – Indian mining company	Barilla – value for itself, for farmers and for the planet

For Supply Chain 1.0, consider this German chemicals manufacturer's struggles with its S&OP process

Problem

- Sales orders higher and quite different from what was forecasted before
- This is despite a sales-and-operations process (S&OP) in place with 24-month rolling horizon
- Not being able to fulfil orders seen as a big risk in the company across all continents
- Long lead times for mfg plants – cannot produce more in the short term

Integration between Sales and Manufacturing means not just S&OP but also aligning their interests

Solution/Aftermath

- Likely real issue: different levels of commission at agreed upon forecast level and above agreed upon level (incentive to under-forecast, manufacturing has a disincentive to overproduce)
- Acquired an equally large company to reduce non-fulfilment risks (and with other motivations), but its own stock price took a big hit
- Needed to integrate manufacturing and sales better, keeping incentives in mind.

In contrast, consider a US air conditioner manufacturer that ensured Sales and Pricing were both working together

Problem

- Company losing money of excessive deal-specific discounts to B2B customers
- Analysis of invoices showed highly varying discounts despite company guidelines
- Senior management intervention with Pricing to get discounts approved for Sales

Company used Six Sigma to improve controls on discounts to ensure Pricing and Sales were working together

Aftermath...

- Company used **Six Sigma Pricing*** – applying Six Sigma controls to discounts with simple measures, such as CEO looking at top 5 discounts every week; intervening senior manager had to give name as approver)
- In the first quarter, **profits increased by a few million dollars** in the implementing division (no improvement in other divisions)

*Sodhi M., Sodhi, N. 2005. Six Sigma Pricing. HBR.

For Supply Chain 2.0, note that having supply chain partners is the cause of various supply chain risks. Consider Ericsson's experience with its handset business in 2001

Ericsson

- World leaders Ericsson and Nokia both had single-sourced Philips plant in Albuquerque, NM
- Freak accident (lightning strike → small fire → sprinkler system and Fire Brigade)
- Ericsson waited while Nokia redesigned its chip requirement and locked up capacity elsewhere

Aftermath...

- \$400m revenues lost in one quarter, \$2b for the year
- Ericsson could not keep its handset consumer business → Sony Ericsson → Sony alone
- Ericsson is completely out of handset business.

Ericsson's supply chain raised risk to the company in the name of higher performance

In contrast, consider a pharma company in 2010, with capacity for vaccination shut down, and facing H1N1 avian flu and potentially millions of deaths worldwide

Problem

- H1N1 outbreak at an unexpected time
- Capacity for treatments had been decimated
- Sudden demand increase for anti-virals by governments around the world
- Previous variant, Spanish Flu, had killed millions of people

Solution/Aftermath

- Asthma capacity redeployed (but asthma cases also expected to go up)
- Found supply chain partners in China with one-time use inhalers (while protecting IP for multi-use inhalers)

This pharma's supply chain was designed for resilience to the company in case of big change in demand or supply

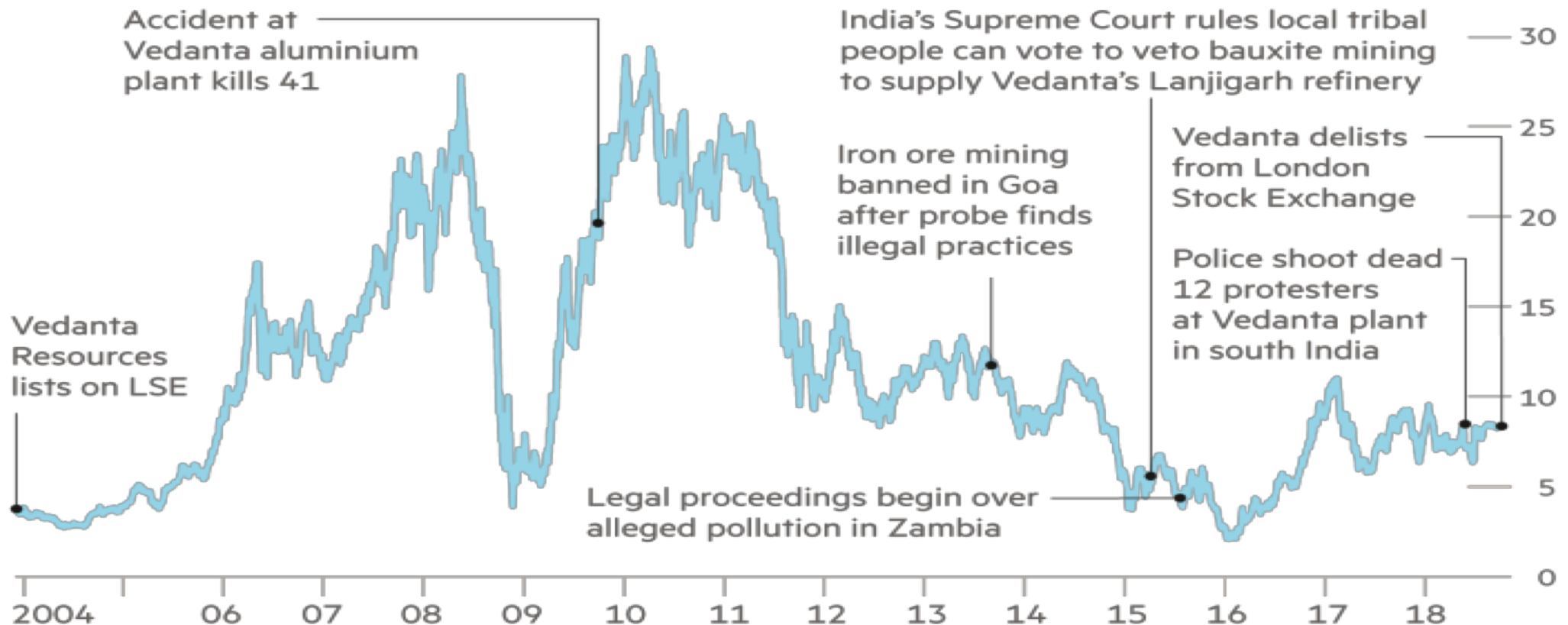
Now consider Supply Chain 3.0...remember Avatar?



India-based mining company, Vedanta has literally had its own Avatar experience as a miner

Vedanta's bumpy ride on the London Stock Exchange

£ per share



Source: Refinitiv, formerly Thomson Reuters

© FT

In 2010, Vedanta sought to source bauxite from Niyamgiri Hills in eastern India for its new alumina refinery at Lanjigarh in eastern India

Problem

- Outcry over sourcing from the Niyamgiri hills in eastern India, **sacred to local tribal people**
- Protesters in London daubed themselves **blue** to evoke comparisons with **Avatar**
- Supreme Court ordered for the people to be given a voice on access to bauxite, and the people said no.

Vedanta got higher costs in its search for lower costs

Aftermath...

- Costs went up...Vedanta had to source from sources as far away as Guinea in Africa
- Prominent investors such as the Church of England and the Norwegian government pension fund dumped their stakes
- State govt. gave permission to expand refinery operations
- In 2016, Norwegian pension fund warned that police appears to be close to Vedanta and that displaced people had been poorly compensated.

And in May 2018, Vedanta exceeded the plot in *Erin Brockovich* in Tuticorin in southern India

Problem

- Seventh largest copper smelting plant in the world, half of all Indian copper production
- Shut down in 1998 due to water contamination, reopened, shut down again 2013 due to major gas leak, reopened
- On 22 May, 2018, local people protested against accumulated cancer incidents over two decades
- Police came in, shot 12 people dead
- State govt. shut down plant, wiping out nearly all of Vedanta's copper exports.

Aftermath...

- Labour Shadow Chancellor in London called for delisting of Vedanta from London Stock Exchange
- In Oct 2018, Vedanta bought its shares to become a private company, and exited the Stock Exchange.

Keeping up production meant shutting down production – Vedanta managers did not create value for their company

She brought a
small town to its feet
and a huge company
to its knees.

Julia
Roberts
is
Erin
Brockovich

Based on a true story.

ERIN BROCKOVICH: THE
LIFE OF A WOMAN WHO
FIGHTED THE TOXIC
WASTE INDUSTRY
AND WON
A LITIGATION
WORTH \$2.8 BILLION
IN DAMAGES
FOR A TOWN
OF 40,000 PEOPLE
WHOSE WATER
WAS CONTAMINATED
BY A TOXIC
WASTE
PLANT

By contrast, consider Italian pasta maker, Barilla, and its actions in Italy

Problem

- Durum wheat being shipped from US to Italy for Italian market
- Company wants to lower carbon footprint, having local sourcing for the Italian market
- But Italian farmers exiting wheat cultivation (huge increase and then decrease in global wheat prices)

Barilla created value for itself by creating value for farmers: farmers wanted stability in price, Barilla wants lower costs but also supply

Solution/Aftermath

- Barilla evolved contracts with farmer organizations
- 1) Mix of market price and mutually agreed minimum-profit prices – let farmers choose the mix 80-20 Or 70-30, etc. – with quantity range
- 2) Contracts with protein content – higher prices with protein content
- 3) Sustainability contracts: web used for best practice in association with Italian universities: minimum fertilizer to be used – lowers farmer's cost, more profit.

So, some companies succeed and others don't with their supply chains

Level	Lost value	Gained value
1.0	Chemicals company with S&OP but no mfg-sales alignment	US air conditioner manufacturer – aligned Pricing and Sales for profits
2.0	Ericsson – created efficient but brittle supply chain	Pharma company – built resilience into the supply chain, showed it can save the world
3.0	Vedanta – didn't learn from Avatar	Barilla – value for itself, for farmers and for the planet

Overall structure

1. What are these levels?
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Why...At each level, managers face different challenges...

Baseline	1.0	2.0	3.0
Within manufacturing, distribution or customer service silos	Silo operations: Integration between marketing and manufacturing	Inter-company	Between supply chain and the societies in which the supply chain operates

a different remit and scope...for their decision making

Baseline	1.0	2.0	3.0
Within function	Across function, within company	Across companies	Across companies and other entities: unions, NGOs, local government

and they have to pursue different initiatives...

Baseline	1.0	2.0	3.0
<ul style="list-style-type: none">• Best of breed for each function• Lean manufacturing	<ul style="list-style-type: none">• Lean supply chain• ERP• APS (advanced planning & scheduling)	<ul style="list-style-type: none">• Extended ERP• CPFR: Collaborative planning, forecasting & replenishment• Agility, adaptability and alignment (AAA supply chain)• Additive mfg	<ul style="list-style-type: none">• Improving life for supplier's supplier's employees• Ensuring living, even minimum, wage throughout the supply chain• Environmental and social sustainability

SRBV (stakeholder resource based view)* says that different stakeholders have different objectives that must also be met...

	Baseline	1.0	2.0	3.0
Stakeholders	Functional heads	Division/ corporate heads	Suppliers, customers	Society in which the supply chain operates
Objectives	Meeting function goals	Meeting corporate or division goals	Meeting their respective corporate goals	Meeting society's goals as well. High quality jobs, good quality of life, etc.

*Sodhi, M. 2015. Conceptualising Social Responsibility in Operations via Stakeholder Resource-Based View (February 10, 2015). Production and Operations Management,

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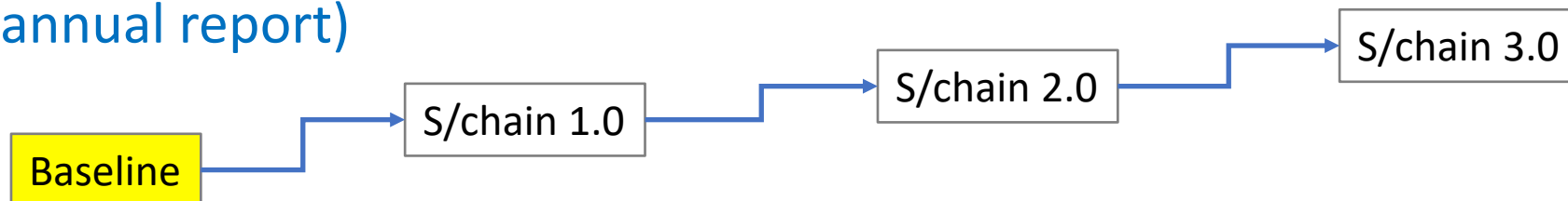
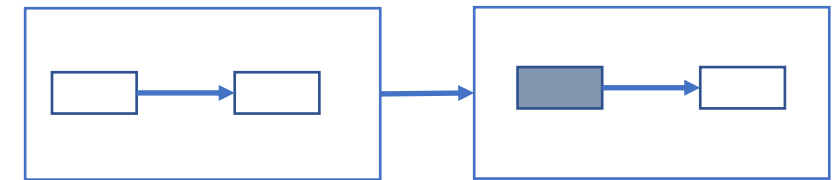
To get more value...managers should first realize what phase of the supply chain were they in...and what they are responsible for. For baseline, their remit is within the function so...

- **Overall objective**

- Improve efficiency (effectiveness)

- **Initiatives**

- Lower costs
 - Lean – to lower inventory, decrease waste in general, become more agile
 - Improve fulfilment to the (internal) customer
 - Realize your remit is within the function (objectives may be too far from corporate objectives in the annual report)



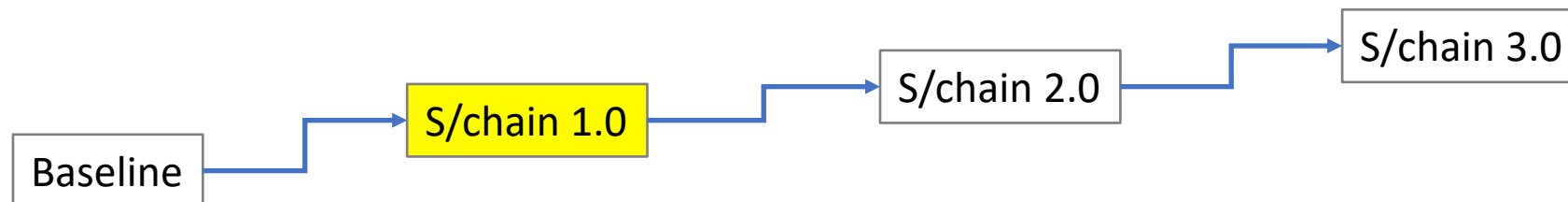
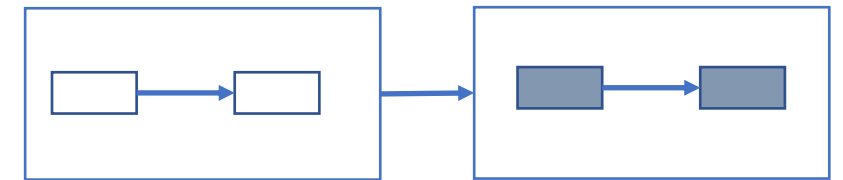
To get more value...for Supply Chain 1.0, managers' remit is across two or more functions so...

- **Overall objective**

- Increase division profits: Lower costs while improving fulfilment

- **Initiatives**

- Align incentives across the functions
 - Lean – to lower inventory, decrease waste in general, become more agile
 - Improve fulfilment to the (internal) customer
 - Look for greater efficiency



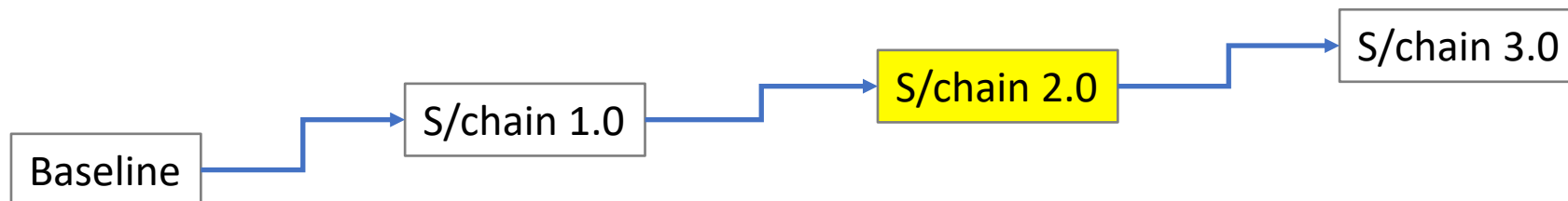
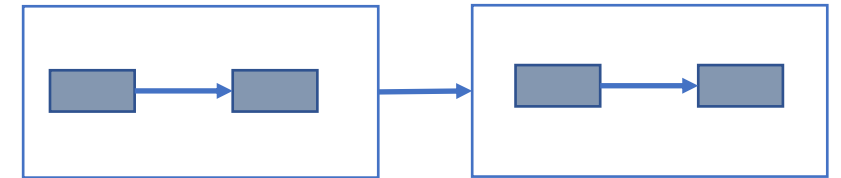
To get more value...for Supply Chain 2.0, their remit is across the supply chain so...

- **Overall objective**

- Increase supply chain profit (total profit across the supply chain)

- **Initiatives**

- Align incentives across the companies
- Reduce risk anywhere in the supply chain



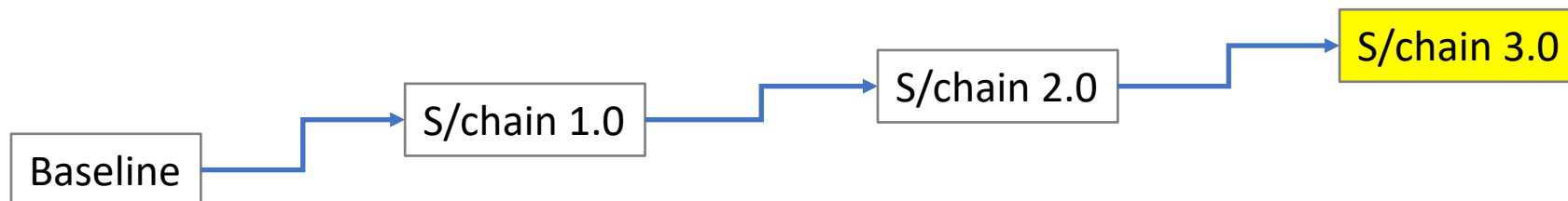
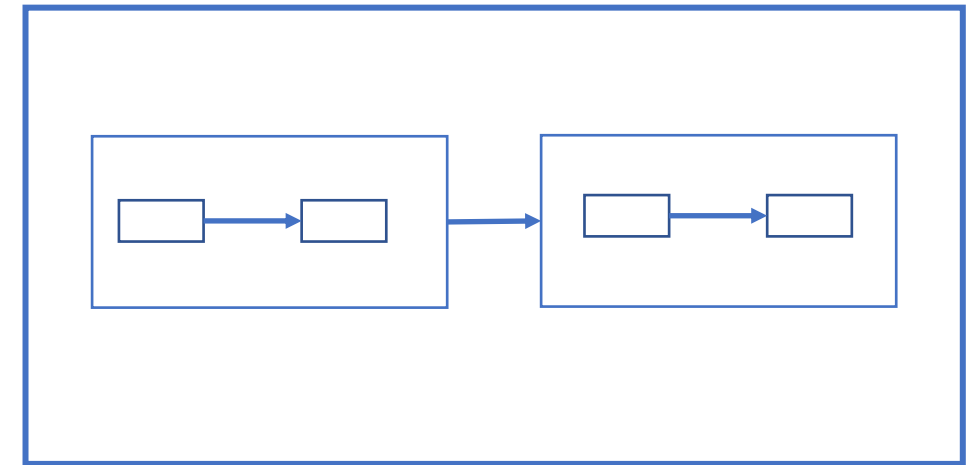
To get more value...For Supply Chain 3.0, their remit is society
SO...

- **Overall objective**

- Increase benefit to society
- Reduce costs of all types on society

- **Initiatives**

- Social sustainability
- Environmental sustainability
(beyond greenwashing or philanthropy)



Wouldn't society benefit if a company gave all its goods away for free? Or stopped producing anything?

- No, remember the levels
- At 3.0 level, think about society – jobs created, value created for suppliers, etc.
- At 2.0 level, company (shareholders, managers) need to benefit
- At 1.0 level, divisions need to benefit
- At baseline, functions need to benefit

By separating the thinking at different levels, there is no conflict

The value is built into the level – have to choose the right decision to make at each level

For instance, at level 2.0, managing risk alone leads to better performance* (lower costs, higher revenues) so why not just focus on managing risk?

- **Segmentation** : Zara has different supply chains for different products
- **Regionalization**: Diageo's global supply chains replaced by regional supply chains, improves sustainability (at 3.0 level), reduces costs
- **Deconcentrating resources** (warehouses, plants, ..): Lower transportation costs, lower carbon costs, faster fulfilment

*Sodhi, M.S. Using risk to drive supply chain performance. ISM, Aug 2018. <ismmagazine.org>

To conclude...I have presented

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